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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/633,170	08/01/2003	Harunori Hirao	4296-167 US	4596
7590	06/10/2005		EXAMINER	
Diane Dunn McKay Mathews, Collins, Shepherd & McKay, P.A. Suite 306 100 Thanet Circle Princeton, NJ 08540				PUTTLITZ, KARL J
		ART UNIT	PAPER NUMBER	1621
DATE MAILED: 06/10/2005				

Please find below and/or attached an Office communication concerning this application or proceeding.

<b>Office Action Summary</b>	<b>Application No.</b>	<b>Applicant(s)</b>	
	10/633,170	HIRAO ET AL.	
	Examiner Karl J. Puttlitz	Art Unit 1621	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) Responsive to communication(s) filed on 18 May 2005.
- 2a) This action is FINAL.                    2b) This action is non-final.
- 3) Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) Claim(s) 1,3,4,6 and 7 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) Claim(s) \_\_\_\_\_ is/are allowed.
- 6) Claim(s) 1,3,4,6 and 7 is/are rejected.
- 7) Claim(s) \_\_\_\_\_ is/are objected to.
- 8) Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) The specification is objected to by the Examiner.
- 10) The drawing(s) filed on \_\_\_\_\_ is/are: a) accepted or b) objected to by the Examiner.  
 Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
 Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) All    b) Some \* c) None of:
  1. Certified copies of the priority documents have been received.
  2. Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |   |  |
|---|--|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)   | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____. |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                                    | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)              |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date _____. | 6) <input type="checkbox"/> Other: _____.  |

S.O.D.

## DETAILED ACTION

### ***Continued Examination Under 37 CFR 1.114***

A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 5/18/2005 has been entered.

The rejection under section 103 is withdrawn since Kadowaki neither teaches nor suggests to those of ordinary skill to modify its teachings to include the step of introducing the absorbent water into the acrylic acid absorption column at a mass flow rate in the range of 0.1 to 1.5 times the mass flow rate of propylene introduced into said first reaction zone.

JP-A-2000-103761 fails to remedy the deficiencies of Kadowaki in teaching the claimed invention since this reference neither teaches nor suggests the step of introducing the absorbent water into the acrylic acid absorption column at a mass flow rate in the range of 0.1 to 1.5 times the mass flow rate of propylene introduced into said first reaction zone.

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The outstanding rejection under the judicially-created doctrine of obviousness-type double patenting is withdrawn in favor of the new ground of rejection:

### ***Double Patenting***

The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. See *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and, *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent is shown to be commonly owned with this application. See 37 CFR 1.130(b).

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

Claims 1, 3, 4, 6 and 7 are (instant claims) provisionally rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 1-6 of copending Application No. 10/632,762 (co-pending application) in view of Kadowaki or U.S. Patent No. 6,384,274 to Elder et al. (Elder).

This is a provisional obviousness-type double patenting rejection.

The instant claims are drawn to a method for the production of acrylic acid comprising a step of introducing a mixed gas containing propylene and molecular oxygen into a first reaction zone packed with a complex oxide catalyst having molybdenum and bismuth as essential components and oxidizing propylene and obtaining an acrolein-containing gas, a step of introducing said acrolein-containing gas

into a second reaction zone packed with a complex oxide catalyst having molybdenum and vanadium as essential components and obtaining an acrylic acid-containing gas, and a step of introducing said acrylic acid-containing gas into an acrylic acid absorption column and causing it to contact an absorbent water thereby obtaining an acrylic acid-containing solution which comprises the steps of

- (a) said first reaction zone and said second reaction zone being formed in a single reactor by dividing reaction tubes with at least one perforated tube plate,
- (b) said mixed gas for introduction into said first reaction zone having a propylene concentration in the range of 7 - 15 vol. % and a water concentration in the range of 0 - 10 vol. %,
- (c) said absorbent water is introduced into said acrylic acid absorption column at a mass flow rate in the range of 0.1 - 1.5 times the mass flow rate of propylene introduced into said first reaction zone and
- (d) said acrylic acid-containing solution obtained in said acrylic acid absorption column having a water concentration in the range of 1 - 45 wt. %.

The claims of the co-pending application are drawn to a method for the production of acrylic acid comprising a step of introducing a mixed gas containing propylene and molecular oxygen into a first reaction zone packed with a complex oxide catalyst having molybdenum and bismuth as essential components and oxidizing propylene and obtaining an acrolein-containing gas, a step of introducing said acrolein-containing gas into a second reaction zone packed with a complex oxide catalyst having molybdenum and vanadium as essential components and obtaining an acrylic acid-

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containing gas, and a step of introducing said acrylic acid-containing gas into an acrylic acid absorption column and causing it to contact an absorbent thereby obtaining an acrylic acid-containing solution.

The process further comprises the steps of:

(a) said first reaction zone and said second reaction zone being formed of different reaction tubes, (b) said mixed gas for introduction into said first reaction zone having a propylene concentration in the range of 7-15 vol. % and a water concentration in the range of 0-10 vol. %, and (c) said acrylic acid-containing solution absorbed in said acrylic acid absorption column having a water concentration in the range of 1-45 wt. %.

or

(a) said first reaction zone and said second reaction zone being formed of different reaction tubes, (b) said propylene concentration of said mixed gas introduced into said first reaction zone being in the range of 7-15 vol. % and the water concentration in said mixed gas being in the range of 0-10 vol. %, and (c) said water concentration of said acrylic acid-containing solution obtained in the acrylic acid absorption column being adjusted to a level in the range of 1-45 wt. % by adjusting the amount of an absorbent to be introduced.

See claims 1 and 4 of the co-pending application.

The claims of the copending application also cover those embodiments wherein the amount of said absorbent to be introduced is 0.1-1.5 times the mass flow amount of propylene introduced into said first reaction zone. See claim 5.

The difference between the process recited by the instant claims and the process recited by claims 1-6 of the co-pending application is that the instant claims require that said first reaction zone and said second reaction zone are formed by dividing reaction tubes with at least one perforated tube plate. It is for this proposition that the examiner now joins Kadowaki. Specifically, Fig 1 and Fig 2 of Kadowaki both illustrate a perforated tube plate (2), which separates the first reaction zone:

FIG. 1

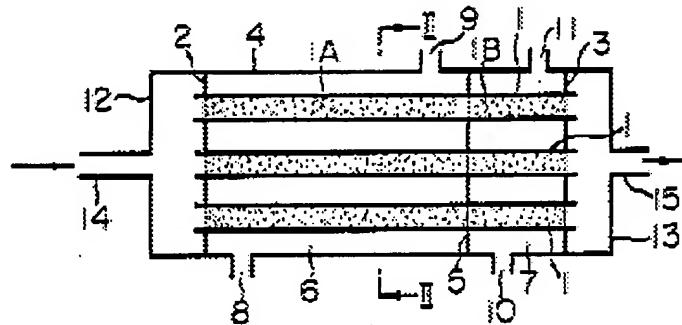
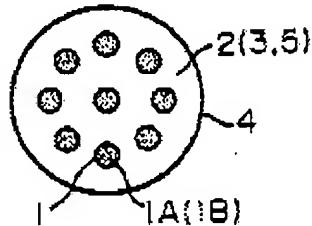


FIG. 2



See column 8, lines 56-63 ("The interior space of the shell 4, outside of the tubes 1 and between the end sheets 2 and 3 is thereby divided into a chamber 6 surrounding the reaction region and a chamber 7 surrounding the cooling region.").

Alternatively Elder teaches the tube and shell reactor at column 4, lines 3-23.

One of ordinary skill would have been motivated to include a perforated plate into the tubes of the instant claims since Kadowaki teaches that this configuration can provide for a cooling region. See column 8, lines 59-63. Therefore, based on the above, the combination of claims 1-6 of the co-pending application and Kadowaki recite the elements of the claimed invention with sufficient guidance, particularity, and with a reasonable expectation of success, that the invention would be *prima facie* obvious to one of ordinary skill (the prior art reference teaches or suggests all the claim limitations with a reasonable expectation of success. See M.P.E.P. § 2143).

### ***Conclusion***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Karl J. Puttlitz whose telephone number is (571) 272-0645. The examiner can normally be reached on Monday to Friday from 9 a.m. to 5 p.m.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Johann Richter, can be reached at telephone number (571) 272-0646. The

fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

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